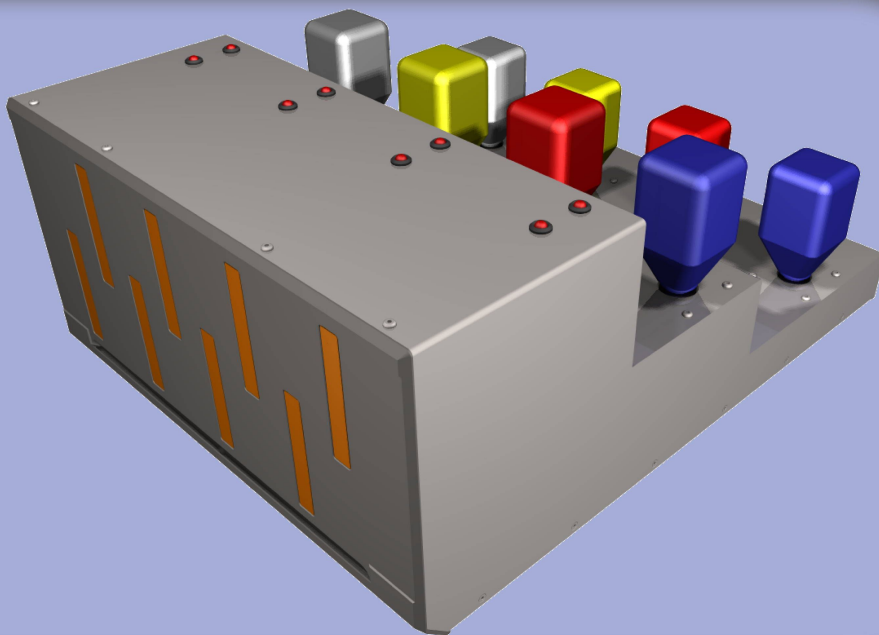


Ale

DESIGN • PRINT • TRACE



Coral 144

OPERATOR MANUAL

Disclaimer

This manual contains instructions for operating the **Ale** Coral 140 printer. Read it carefully before performing any manipulation.

All service operations should be undertaken by qualified personnel only. Contact-us if you need training for our equipment.

All information written in this Operator Manual was correct at the time indicated in the version table below. However, the continual enhancement of our products may result in some differences existing between the information contained in this document and your equipment.

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Version history:

Date:	Revision:	Modifications:	Author:
03/12/10	First version	Only solvent version	AF

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Notes

1 Description

1.1 Print-head description

Features:

- 142mm print-band
- Cyan, Magenta, Yellow and Black colours (CMYK)
- print-forward only
- uses **Ale** 250mL ink bottles
- 304 Stainless steel enclosure
- IEEE1394 data cables (to connect with a MasterSeries controller)

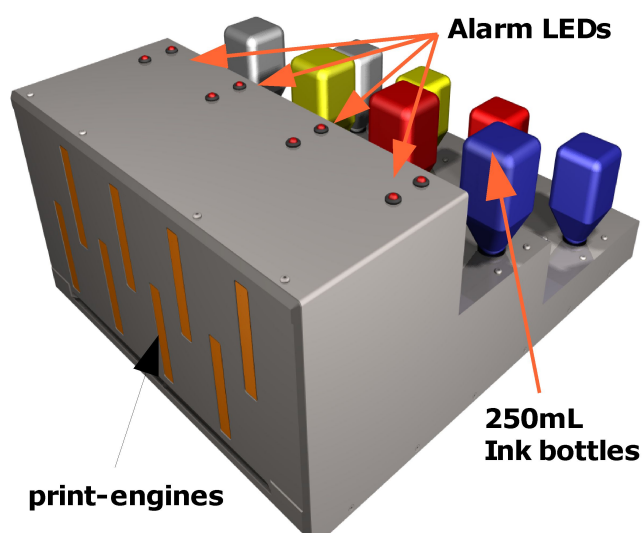


Fig. 1: Coral 144 print-head front view

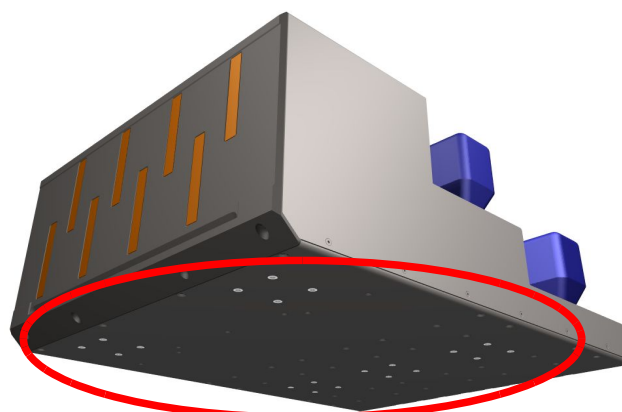


Fig. 2: 24x M5 mounting holes underneath

On top of the Coral 144 print-head are 8 alarm LEDs. See [1.4 Alarm LEDs](#) for information.

1.2 Numbering

Each of the 8 printing channels is numbered (print-engine, Alarm LED, cable, ink reservoir), as described by the following drawings.

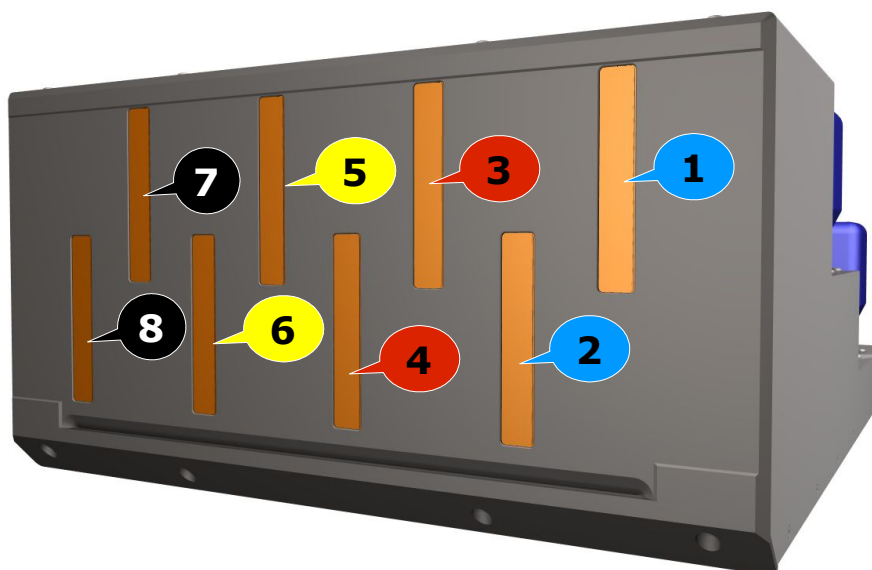


Fig. 3: print-engines numbering (front view)

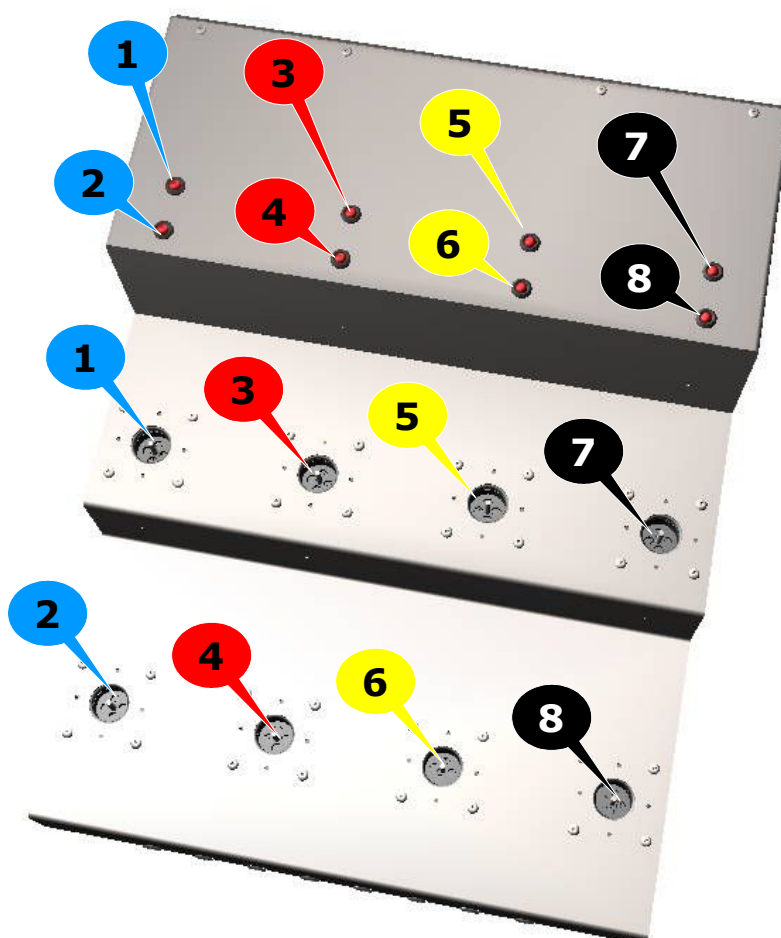
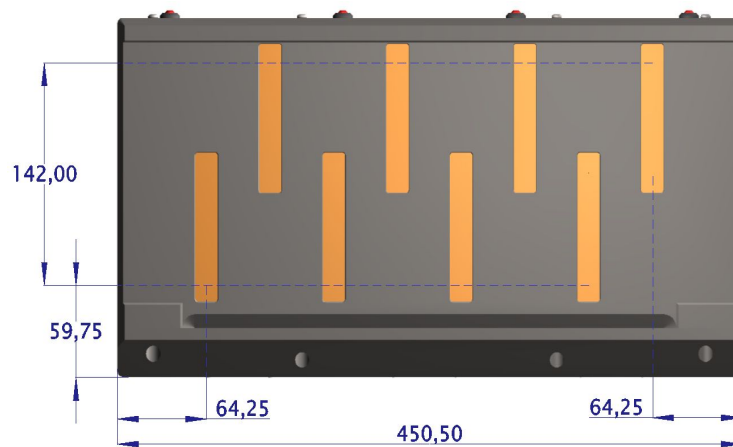
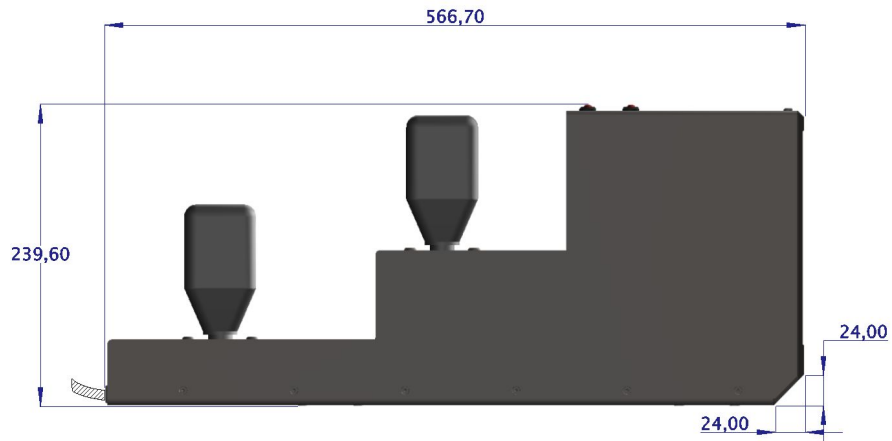


Fig. 4: ink circuits numbering

1.3 Dimensions

The main dimensions are given in the following drawings (Fig. 5).



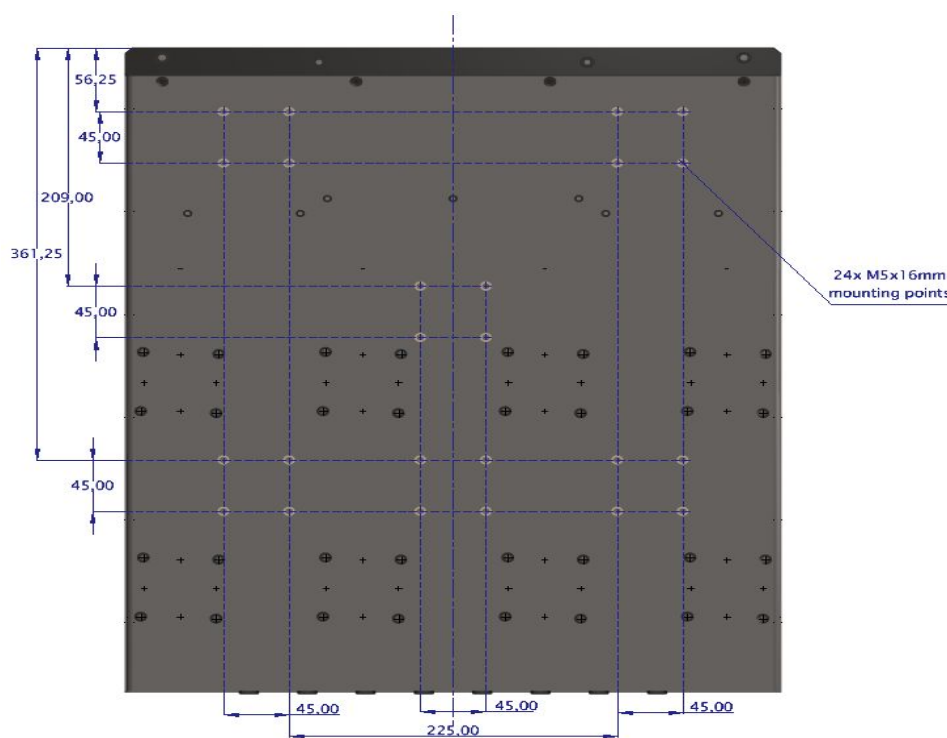


Fig. 7: Coral 144 bottom dimensions with M5 mounting points

1.4 Alarm LEDs

There are eight red alarm LEDs on top of the print-head. Each one corresponds to an ink bottle (See 1.2 for numbering). It starts blinking when the level of ink is too low in the corresponding reservoir, which means that the bottle of ink is empty. Replace it by following the steps described in [3.1. Ink bottle replacement](#)

After a configured number of prints, if the ink level is still low in the reservoir, the controller stops the printing (to avoid defective printings). See the controller manual for information on configuring the number of prints after the ink-low signal.

When the ink low is detected, the print-head sends an alarm signal to the controller, which can transfer it to an external device such as a PLC. See controller manual for details.

2 Start Up

2.1 On line installation

2.1.1 Defining the position of the system

After unpacking the printer and checking that the contents correspond to your order and to the delivery note, the first operation will be to set the position of the print-head on the conveyor. The correct print-head position can be determined using Codex and its 3D capabilities (Fig. 8). Please refer to the Codex manual for details.

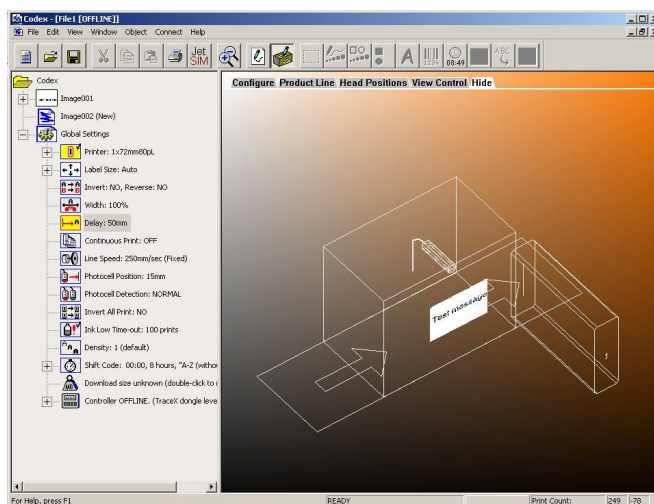


Fig. 8: CodeX 3D view with a 72mm print-head

You must know that the system must be adjusted so that the surfaces to be printed don't touch the print-head, and are at a maximum distance of 3mm (Fig. 9).

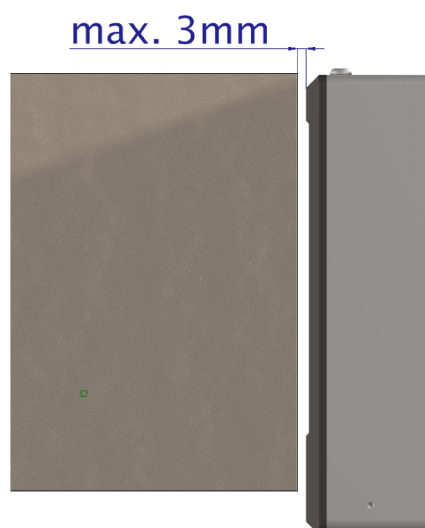


Fig. 9: Maximum printing distance : 3mm

Evaluate, then set precisely the product distance several times before “inking up” the printer and printing messages ! We strongly recommend fitting product guide rails.

Don't hesitate to contact your distributor in case you have any questions regarding the position of the printer.

2.1.2 Installing the system along the conveyor

Once the correct position of the printer is theoretically determined, take the S062 squares out of the box (Fig. 10) and screw them in the desired position along the conveyor onto a stable independent floor-stand. Screw the Coral 144 print-head to S062s, using the M5 holes under the print-head enclosure (see also packing list). The Coral 144 should be fixed with at least 4 sets of M5x16mm screws.

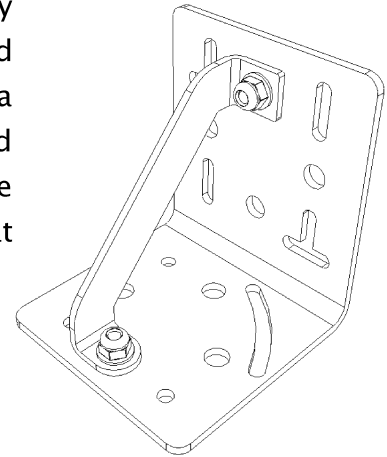


Fig. 10: S062 Square



Due to the risk of vibration, it is not recommended to fix the printer directly onto the conveyor.

Install the controller and connect it to the print-head using the supplied IEEE1394 cables but do not power on.

When the final position of the print-head along the conveyor is determined, the next step is to “ink up” the Coral print-head, as it is shipped dry (see next chapter).

2.1.3 Photocell installation

Install the supplied photocell close to, but before the print-head. This will detect the product just before it passes the print-head nozzles (Fig. 11)

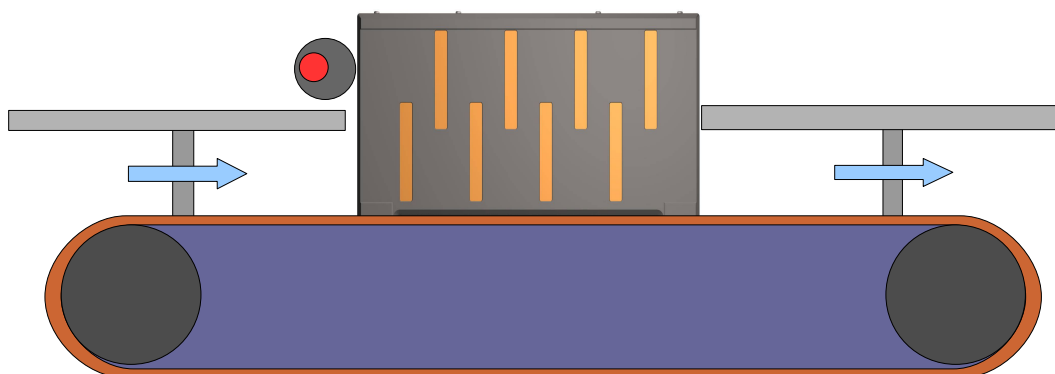


Fig. 11: Photocell position

When installing the photocell ensure that the detection is not confused by reflections, or by poor light or colour contrast. The two LED lights on the photocell should only light once as it detects the passage of the product. If this is not the case, adjust the sensitivity by rotating the little screw either left or right (see manufacturers instructions).

2.1.4 Encoder installation

It is recommended to add an encoder to the system if :

- the production line has an often varying or automatically varying speed
- barcodes are printed.

In both cases it is recommended to install the encoder as close as possible from the printing position of the printer along the conveyor, to minimize the elastic effects of the conveyor belt.

Information for connecting the encoder to the controller and for operating the encoder can be found in the controller manual.

2.2 Inking up for the first time "from dry"



It is recommended that the printer is removed from the production line during this procedure as there is a risk of ink spillage. Fix the printer to a suitable support.

- Support the Coral print-head to a floor-stand, in printing position.
- With the controller switched off, connect it to the print-head using the data cables from the Coral print-head.
- Remove the air pins from the ink trays (Fig. 12). Those pins prevent leaks from the reservoirs during shipment. Also remove the caps from the reservoirs.

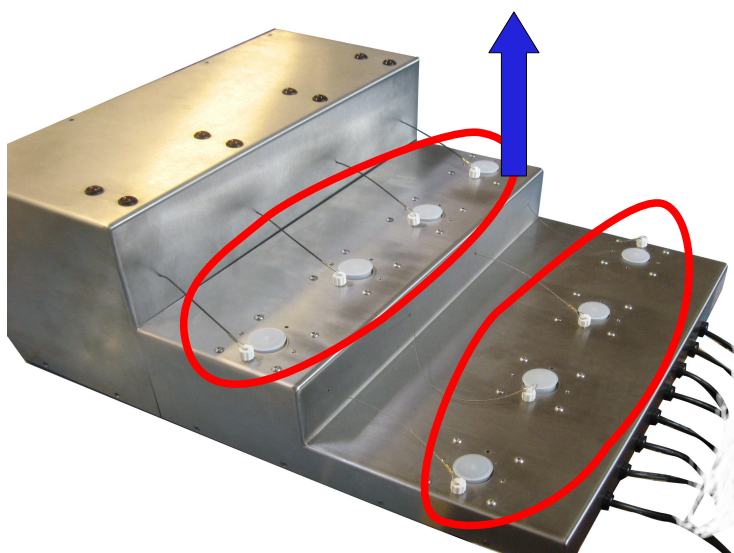


Fig. 12: Remove air pins and caps

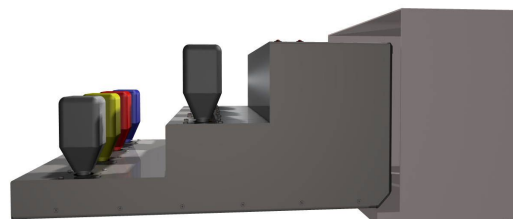


Fig. 13: Place a collecting bucket in front of the print-head

- Place a collecting bucket in front of the print-head (Fig. 13).
- Fit **Ale** Solvant colour ink bottles in the correct reservoirs



SAFETY WARNING! The inks and solvent cleaners are chemical products. In the interests of safety, read the Material Safety Data Sheets carefully before handling the fluids. Always wear protective gloves and eye protection when in contact with any inks or solvents.

The Coral 144-S has been specially built to be used with **Ale** Solvant colour inks. Using any other fluid is likely to severely damage the hydraulic system.

- Fitting a bottle of ink into the reservoir:

Using a craft knife (or a sharp blade), cut the round raised plastic dome on the top of the ink bottle cap (Fig. 14). Turn the bottle up-side down and push into the reservoir (Fig. 15).



Fig. 14: Cutting the plastic cap of the ink bottle

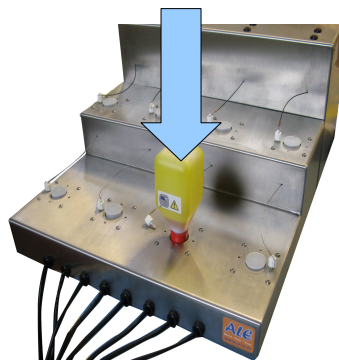


Fig. 15: fitting a bottle

- Switch the controller on. From this moment, the LCD screen will run through the start up procedure. The controller is ready when the red LED goes off. The default language is English on all new machines. To change the language, please report to the controller's user manual.
- The controller needs to be adjusted to the print-head. To do this, the Setup Wizard is used. It can be accessed from the controller's main screen (Fig. 16). Follow the steps of the Setup Wizard for basic configuration. Please report to the controller's user manual for more information.



Fig. 16: MasterPad main screen : access to setup wizard

Then the ink system needs to be purged of air.

To prime the system, proceed as follows :

- From the print menu, Press the “Purge” key. It leads to the Purge Menu (Fig. 17).



Fig. 17: Master Series prime menu access

This menu offers 3 options:

- Jet : primes the circuit at high pressure
- Test : prints with all nozzles
- Norm : primes the circuit at low pressure
- Each print-head has to be primed independently
- To ink up the circuit "from dry" the "Jet" prime is used first (Fig. 18).

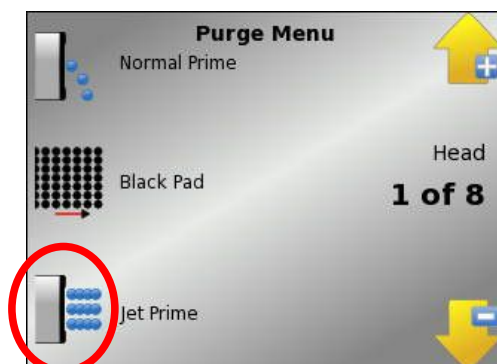



Fig. 18: MasterPad prime menu

- Press . You should hear the pump “load” (the whirring noise slows down when the pumps fills in with ink) Repeat this operation until **ink jets out of the print-engine**.





WARNING : The pump pressure in “inking up” mode is maximum and ink will jet out!!!

- Prime once more using the "Jet" function to remove air from the ink circuit.
- Prime at least once using the "Normal Prime" function. This is done to remove the remaining air bubbles from the circuit.
- Carefully wipe excess ink off (Fig. 19). **Do not touch the nozzle plate** : it is coated with a special “non wetting coating” which is self cleaning.



Fig. 19: !! Carefully and gently !! wipe the excess ink

- Check that all dots are operating : prepare a sheet of paper. Then in the Purge Menu, press "blackpad"  whilst moving the sheet of paper in front of the print-head. This function prints a solid rectangle of either heads 1 to 4 or 5 to 8 , with no white lines across. Otherwise prime again using the "Normal Prime" option and a bucket (Fig. 13) and check again if all dots are operating.
- When the printing is correct on all print-heads, the collecting bucket can be removed (Fig. 13).
- carefully clean the print-head (Fig. 19).
- Exit the Purge menu of the controller 
- Set the system for printing back on your production line.

To make a test print :

Hold a piece of paper in front of the print-head. Briefly press "Test Print" and simultaneously pass the piece of paper across right to left. The result should be similar to Fig. 20.



Fig. 20: Test message

2.3 Print-heads alignment

Once the printer is inked, it is important to adjust the print engines with respect to each other, to get a perfect print. The x parameter is horizontal. Its value can be changed freely. the y is vertical. For physical reason it can be adjusted between -1 and +1.

The Setup Wizard contains 2 screens to do all the alignments:

- Inter-Head Align (Fig. 21): a screen to adjust between colours. It allows to adjust between blue and red for example.



Fig. 21: Setup Wizard Inter-head Align screen for head 1 (Cyan)

- Print-engine Align (Fig. 22) : a screen to make adjustments between 2 print-engines of the same colour. For example if a white line appears in the middle of the print height for the magenta colour, then the y value for Print Engine Align (Head 2) should be decreased (F6)

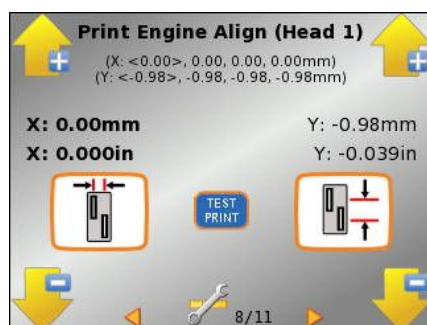


Fig. 22: Setup Wizard print-engine Align screen fro head 1 (Cyan)

3 Printer operation

3.1 Ink bottle replacement

While the printer is in operation, it is necessary to replace the empty ink bottles before the internal reservoirs go empty as well. The printer reservoirs have an optical ink-low detection mechanism, which will send warnings just before the reservoirs become empty : it will turn on the red LEDs on top of the printer, and send an ink-low signal to the controller. After a configured number of prints, if the ink level is still low in the reservoir, the controller stops the printing (to avoid defective printings). See the controller manual for information on configuring the number of prints after the ink-low signal.

To replace the ink bottle, proceed as follows:

- remove the empty ink bottle from the printer
- Using a craft knife (or a sharp blade), cut the round raised plastic dome on the top of the new ink bottle cap (Fig. 14).
- Turn the bottle up-side down and push into the reservoir (Fig. 15).

3.2 Printer service

The printer requires a service every year for routine maintenance and inspection (filters, o-rings replacement, visual inspection...). Please contact your ALE distributor to have your printer serviced by fully trained staff.

4 Controller usage

4.1 Change parameters

All parameters can be modified from the "Settings" screen, which can be accessed from the main screen.



Fig. 23: access to the "Settings" screen

All **Ale** controllers have large memory stores and will accept a large range of character fonts, barcode formats, images and logos. The procedure for loading files into the controllers is detailed in the Codex reference manual.

A full explanation of the parameters is detailed in the complete controller manual found in the included CD. This reference manual has over 300 pages of explanation and advices.

4.2 Make a message

For instructions on how to make a message, please also read the controller's user manual.